

The Role of Retrans in the IBCT

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CREATING THE INTERIM brigade combat team (IBCT) increased the use of digital computer systems. These systems are designed to speed information flow, assist the decisionmaking process, and create situational awareness of both friendly and enemy units. Battalion and brigade tactical operations centers (TOCs) have been the focus of digitization along with supporting equipment throughout battalions and the brigade signal company. The computer systems within the TOCs replace paper maps and other products the TOC staff uses. The TOC staff focuses on the Maneuver Control System (MCS) the S3 uses to track friendly and enemy positions. The MCS is fed information from other TOC computer systems such as the All-Source Analysis System the S2 uses to supply enemy locations; the Combat Service Support Control System the S1 and S4 use to track main supply routes and logistics and personnel statuses; the Advanced Field Artillery Tactical Data System; the Force XXI Battlefield Control Brigade and Below that provides friendly unit positions; and the tactical Internet local area network manager the S6 uses to ensure all systems are connected to transmit large amounts of information.

To permit the critical information flow from company to battalion and battalion to brigade, radio systems capable of transmitting data were needed. Those radio systems are the Enhanced Position Location Reporting System (EPLRS) radio, used for company to battalion data, and the near-term digital radio (NTDR) for battalion to brigade data flow. These radios are located in retransmission (retrans) vehicles in the infantry; reconnaissance, surveillance, and target acquisition units; field artillery battalions; and the brigade signal company.

Traditionally, retrans vehicles act as a relay, providing additional range for frequency modulation (FM) communications. However, because of the tre-

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mendous amount of information, these vehicles must also relay signals for two additional data networks. The first network that uses the EPLRS radio transmits data from company to battalion. The second network uses the NTDR to pass digital information laterally and higher from the TOCs, thus enhancing the timeliness of the decisionmaking process through greater situational awareness and collective planning.

Digital networks require retrans to relay digital information, rendering the original mission of FM communications a third concern when performing mission planning. Without digital information, IBCT TOCs may as well be any other "paper and pencil" TOC; therefore, engineering the digital network becomes the first concern. The NTDR is the key digital radio system that has a planning range of only 10 to 12 kilometers (km) with line of sight. Without a functional NTDR, the lateral and higher digital coordination for collaborative planning, orders dissemination, and friendly/enemy position reports are useless, and situational awareness reverts to analog and FM reporting.

Second, the retrans location must be in a position that supports communication between company and

battalion EPLRS radio systems. With a planning range of approximately 20 km, positioning is slightly more forgiving than the NTDR; however, it is still key to ensuring the bottom-up data flow from company to battalion. Finally, the retrans needs to support its original FM mission. During a fight, FM communication between a company and battalion is still the primary method for information flow; however, providing FM coverage to the company becomes difficult because of its initial placement to support digital systems.

Collaboration between the IBCT S6s and the signal company becomes increasingly important. The S6s must ensure that the retrans organic to their battalions can meet the battalions' communications needs. At the same time, because of additional missions, the S6s must be aware of all brigade requirements for digital connectivity from TOC to TOC. Lessons learned from the brigade digital warfighter exercise held at Fort Lewis, Washington, in September 2001 showed battalion and brigade requirements could conflict due to the lack of retrans assets. By using battalion retrans assets to support the brigade digital network, battalions risk being unable to support the FM communications needed during the close fight when digital traffic is at its lowest. The primary reason for this is that the location providing the vital digital link between battalion and brigade may not be a suitable location for supporting FM communications down to company level during the fight. It then becomes necessary to move the retrans or request an additional retrans from within the brigade for support.

Neither solution is optimal as moving severs the digital link and additional retrans may take too long to arrive to affect the fight or not be available. As such, it became necessary during the exercise to use a third improvised retrans to support battalion FM requirements while the two battalion-authorized retrans were supporting the digital network. Because of its location, the retrans was not in the proper position to conduct FM retrans operations down to company level.

The importance of retrans assets to the brigade is paramount for successful digital and FM operations. The security of the retrans became an issue early during the digital warfighter exercise when key retrans sites were identified. Had some of the retrans



A retrans site at an IBCT digital warfighter exercise, Fort Lewis, Washington.

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sites been eliminated during the conflict, digital and FM communications would have suffered greatly and possibly precluded using the TOC computer systems for collaboration. It was necessary to devote an infantry squad to protect the retrans because each retrans was authorized only two soldiers to operate the equipment and attempt to maintain some security.

The role of retrans in the IBCT is still to provide the critical relay needed to support communications. However, since digital systems must be supported, the mission has become increasingly difficult. Because both digital and FM support are provided, retrans systems have become critical communications assets in the IBCT that require additional security measures to protect them. Overall, network planning and placement of the retrans systems require close scrutiny during development to ensure there are enough assets available to support FM communications during the fight and to support digital transmission at all times if the IBCT is to remain digital on the battlefield. **MR**

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